

Work Order ID 74554

Friday, September 30, 2011 2:23:50 PM

Ship Oct 14



Page 1

Item ID: D3183-044

Accept



Setup Start



Revision ID:

Stop



Item Name: Bracket Assembly

Start Date: 9/30/2011 Start Qty: 10.00



Cust Item ID:

Required Date: 10/14/2011 Req'd Qty: 10.00



Customer:

Reference:

Approvals:

Process Plan:

W

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

Draw Nbr

Revision Nbr

D3183

Rev C1

100

0.00



BAND SAW

Bandsaw

Memo

0.00

Jespa Bandsaw

Cut blanks: (1.500" x 2.250") 5.500" long

SL

11-10-03

(10)

φ

110

0.00



HAAS CNC VERTICAL MACHINING #1

HAAS I

Memo

0.00

HAAS CNC vertical machine #1

1-Machine D3183-4 as per Folio FA322 and Dwg D3183 Identify as D3183-4
2-Deburr 3-Scribe batch number

SL 11-10-11

(10)

1

(PTC) →

120

0.00



QC2- Inspect parts off machine FAI/FAIB

QC

Memo

0.00

Quality Control

SL 11-10-11

10

φ

W/O: 74554 ~~74554~~

WORK ORDER CHANGES

| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
|------|------|------------------|----|------|-----|-------------------------------------|--------------------------|
| | | | | | | | |
| | | | | | | | |

D-3183-041

Part No: D3183-041

PAR #: S/A

Fault Category: Machining/Supplier

NCR: Yes ☒ No ☐

DQA: A

Date: 11.10.14

Resolution: Scrap

Disposition: Scrap

QA: N/C Closed: A

Date: 11/10/14

NCR:

WORK ORDER NON-CONFORMANCE (NCR)

| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
|----------|------|---|-----------------------------|---------------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| 11-10-05 | 110 | - 1 part popped out of jig while machining, part hit the tool while flying out unable to remachine part because of deep crack in part R.C. Process. (Tooling is good / Program is good / Fabric is good, next time runs a edge. | S 057047 11/10/11 | - Scrap + replace Qty = 1 D 115806 | SL 11-10-05 | S 11/10/11 | S 057042 | S 11/10/11 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Work Order ID 74554

Friday, September 30, 2011 2:23:50 PM

Page 2

Item ID: D3183-044

Accept

Revision ID:

Item Name: Bracket Assembly

Start Date: 9/30/2011 Start Qty: 10.00

Required Date: 10/14/2011 Req'd Qty: 10.00

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

130

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

140

Small Fab

0.00



Small Fab

Memo

0.00

Small Fab

Assemble D3183-043 as per Dwg D3183.

150

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

B.A 11/10/11

10 0

9/30/10/12 (10)

11/10/12 (10)

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Work Order ID 74554

Friday, September 30, 2011 2:23:50 PM

Page 3

Item ID: D3183-044

Accept

Revision ID:

Item Name: Bracket Assembly

Start Date: 9/30/2011 Start Qty: 10.00

Required Date: 10/14/2011 Req'd Qty: 10.00

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160

Identify as per dwg & Stock Location: _____

0.00



Packaging

Memo

0.00

Packaging

170

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

11/10/12 [Signature] 102

11/10/12 [Signature]
ME 11-10-12

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
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| | | | | | | | | |

NOTE: Date & initial all entries

Picklist Print

Friday, September 30, 2011 2:23:47 PM

Page 1

Work Order ID: 74554

Parent Item: D3183-044

Parent Item Name: Bracket Assembly

Start Date: 9/30/2011

Required Date: 10/14/2011

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP Rev:Pick:Alt 04.02.18 New issue: KJ/DS
IPP Rev:B Changed Mat Size 08-06-26 JLM Verified By:EC

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Qty per Kit | Total Qty | Qty Issued | Date Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|

| | | | | | | | | | | | | | |
|----------|--|--------------|----|--|--|-----|------|---------|---|----|--|--|--|
| D3121-21 | | Manufactured | No | | | 140 | Each | 12.0000 | 2 | 20 | | | |
|----------|--|--------------|----|--|--|-----|------|---------|---|----|--|--|--|



Bolt

Location

Loc Qty

Loc Code

ST235

12

B 74544

20

66969

3

70771

9

D3183-045

Manufactured No

100

Each

7.0000

2

20



Bearing Assembly

Location

Loc Qty

Loc Code

ST235B

7

B 74849

20

73796

7

M174B1.500X02.250

Purchased No

140

f

27.1009

0.4583

4.824211



17-4 SS Bar 1.50 X2.250

Location

Loc Qty

Loc Code

MAT031

27.1009

108309

1.08

113568

11.8333

115806

14.1876

*4.83

SL 11-10-03

| W/O: | | WORK ORDER CHANGES | | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|--|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector | |
| | | | | | | | | |
| | | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

| | | |
|------------------------------|----------------|-----------------------------|
| DART AEROSPACE LTD | | Work Order: 44584 |
| Description: Bracket | | Part Number: D3183-4 |
| Inspection Dwg: D3183 | Rev: C1 | Page 1 of 1 |

FIRST ARTICLE INSPECTION CHECKLIST

| Drawing Dimension | Tolerance | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|----------------------|---------------|------------------|--------|--------|----------------------|----------|
| R0.190 | +/-0.030 | .188 | / | | | |
| R0.063 | +/-0.010 | .063 | / | | | |
| 0.182 | +/-0.010 | .182 | / | | Vern .123 | |
| 0.070 | +/-0.010 | .071 | / | | | |
| 0.100 | +/-0.010 | .100 | / | | | |
| Ø0.201 x 0.100 | +/-0.010 | .202 x .100 | / | | | |
| 0.182 | +/-0.010 | .182 | / | | | |
| 5.32 | +/-0.030 | 5.319 | / | | | |
| 5.036 | +/-0.010 | 5.036 | / | | | |
| 2.120 | +/-0.010 | 2.121 | / | | | |
| 1.290 | +/-0.010 | 1.291 | / | | | |
| 0.365 | +/-0.010 | .365 | / | | | |
| 0.218 | +/-0.010 | .212 | / | | | |
| 1.030 | +/-0.010 | 1.030 | / | | | |
| 1.90 | +/-0.030 | 1.896 | / | | | |
| 1.012 | +/-0.010 | 1.009 | / | | | |
| Ø0.201 x 0.100 | +/-0.010 | .202 x .101 | / | | | |
| 0.786 | +/-0.010 | .785 | / | | | |
| Ø0.392 | +0.002/-0.000 | .392 | / | | | |
| R0.19 | +/-0.030 | .188 | / | | | |
| 3.954 | +/-0.010 | | | | | |
| 0.162 | +/-0.010 | .162 | / | | | |
| R0.19 | +/-0.030 | .188 | / | | | |
| R0.25 | +/-0.030 | .250 | / | | | |
| 4.26 | +/-0.030 | 4.262 | / | | | |
| 2.800 | +/-0.030 | 2.800 | / | | | |
| Calculated dimension | | | | | | |
| 0.162 | +/-0.010 | .163 | / | | | |
| 0.615 | +/-0.010 | .619 | / | | | |
| 0.435 | +/-0.010 | .435 | / | | | |
| 0.200 | +/-0.010 | .202 | / | | | |
| 0.381 | +/-0.010 | .385 | / | | | |
| 0.032 | +/-0.010 | .027 | / | | 1-G-27 | |

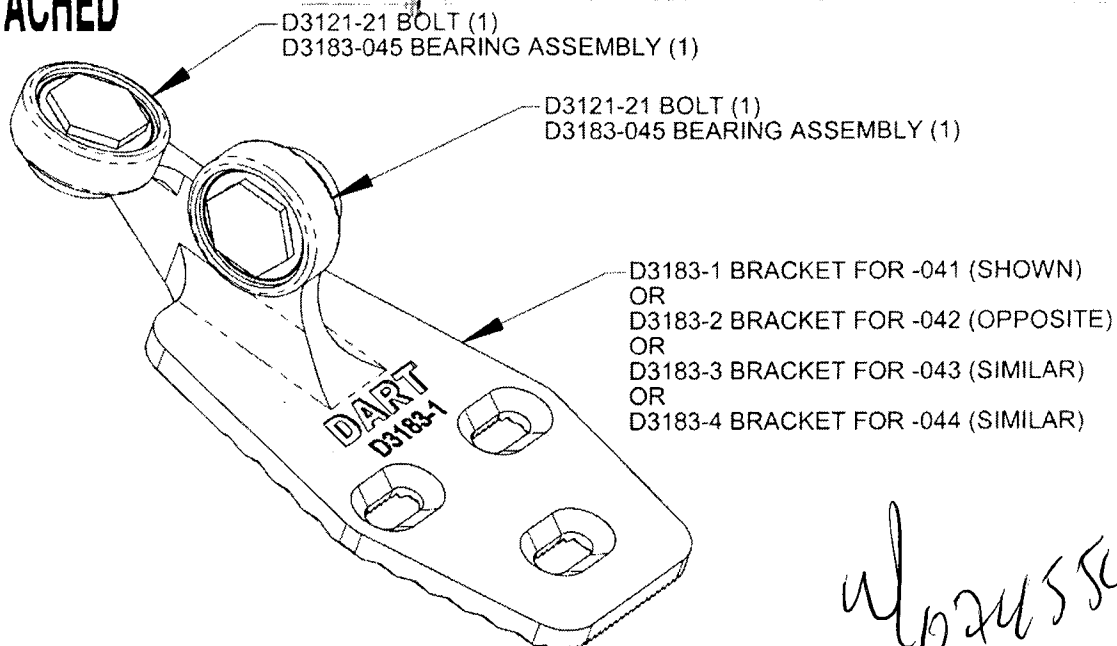
| | | | |
|-----------------------|------------------------|------------------------------|-----|
| Measured by: J | Audited by: G.A | Preliminary Approval: | N/A |
| Date: 11-10-04 | Date: 11/10/11 | Date: | N/A |

| Rev | Date | Change | Revised by | Approved |
|-----|----------|---|------------|----------|
| A | 03.11.12 | New Issue P/O D3183-044 | KJ/RF | |
| B | 04.03.15 | Changes as per revision C | KJ/JLM/RF | |
| C | 04.06.15 | Dimension 2.800 was 2.080; removed 1.155, 0.36 dimensions | KJ/JLM | |
| D | 06.03.09 | Dwg Rev update | KJ/JLM | |
| E | 08.01.16 | Dimensions revised | KJ/EC/DD | |
| F | 10.09.23 | Dimensions revised | KJ | AA |

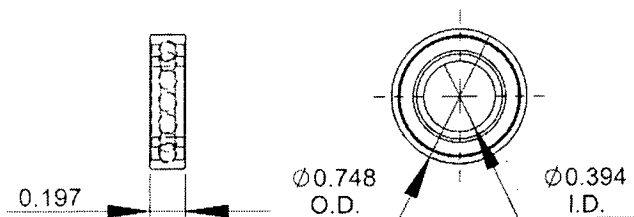


| | | | |
|-------------------------|---------------|--|------------------------|
| DESIGN # | DRAWN BY # | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| CHECKED # | APPROVED # | DRAWING NO. D3183 | REV. C SHEET 1 OF 4 |
| DATE 04.02.17 | | TITLE BRACKET ASSEMBLY | SCALE 1:1 |
| A | 03.01.24 | NEW ISSUE | |
| B | 03.06.17 | REMOVE BEARING; 1.012 WS 0.882 | |
| C | 04.02.17 | ADD -045/-9; 0.182 WAS 0.431 | |
| C1 | # 04.11.09 | 0.830 WAS 0.850 | |

RELEASED
04 03 01
DEO ATTACHED

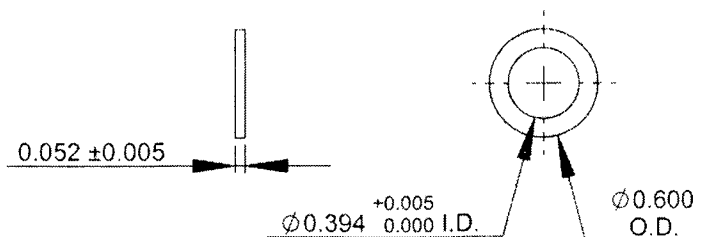


D3183-041 BRACKET ASSEMBLY (SHOWN)
D3183-042 BRACKET ASSEMBLY (OPPOSITE)
D3183-043 BRACKET ASSEMBLY (SIMILAR)
D3183-044 BRACKET ASSEMBLY (SIMILAR)



D3183-5 BEARING:
SPECIFICATION CONTROL DRAWING

- 1) SINGLE ROW, DEEP GROOVE, CONRAD TYPE, SHIELDED
- 2) POSSIBLE SUPPLIER: NSK P/N 6800ZZ
- 3) ALL DIMENSIONS ARE IN INCHES



D3183-7 WASHER

- 1) MATERIAL: AISI 303 ROUND BAR (M303R) ANNEALED
- 2) BREAK ALL SHARP EDGES 0.005 TO 0.010
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) ALL DIMENSIONS ARE IN INCHES

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| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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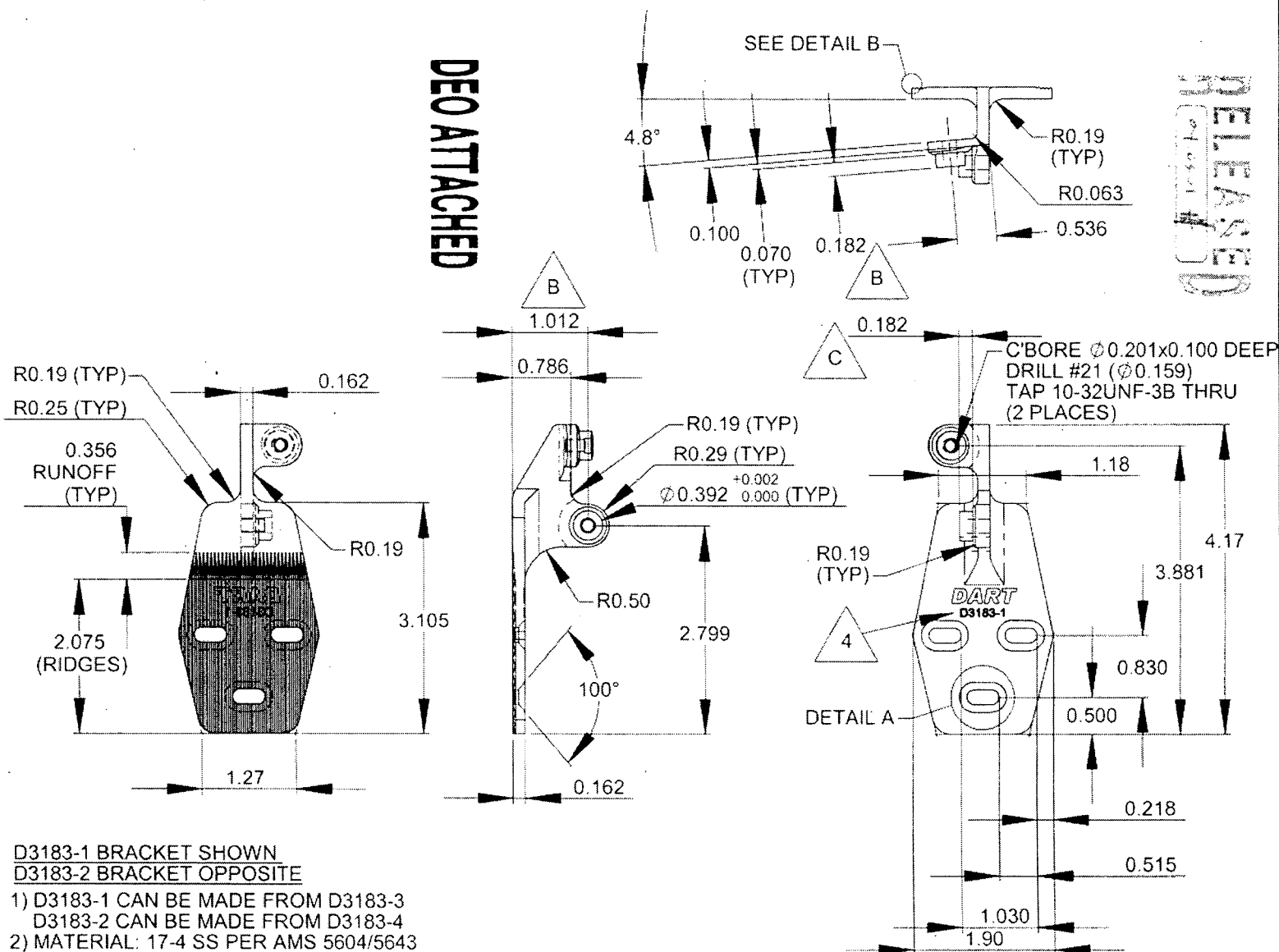
NOTE: Date & initial all entries



| | | | |
|----------|----------|--|--------------|
| DESIGN | DRAWN BY | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | APPROVED | DRAWING NO. | REV. C |
| | | D3183 | SHEET 2 OF 4 |
| DATE | | TITLE | SCALE |
| 04.02.17 | | BRACKET ASSEMBLY | 1:2 |

SEE DETAIL B

DEO ATTACHED



D3183-1 BRACKET SHOWN
D3183-2 BRACKET OPPOSITE

- 1) D3183-1 CAN BE MADE FROM D3183-3
D3183-2 CAN BE MADE FROM D3183-4
- 2) MATERIAL: 17-4 SS PER AMS 5604/5643
(REF DART SPEC. M17-4-B)
MIN ULTIMATE STRENGTH = 150 ksi
MIN YIELD STRENGTH = 100 ksi
- 3) BREAK ALL SHARP EDGES 0.005 TO 0.015
- 4) ENGRAVE DART P/N & LOGO AS SHOWN
- 5) TOLERANCES ARE PER DART QSI 018 UNLESS
OTHERWISE NOTED
- 6) ALL DIMENSIONS ARE IN INCHES

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|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

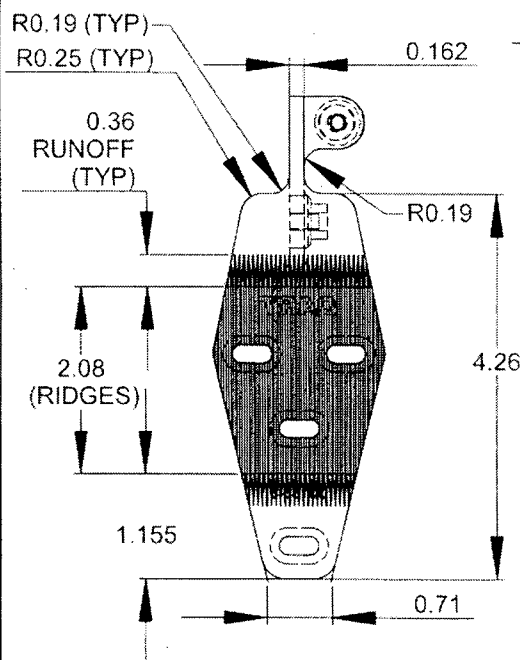
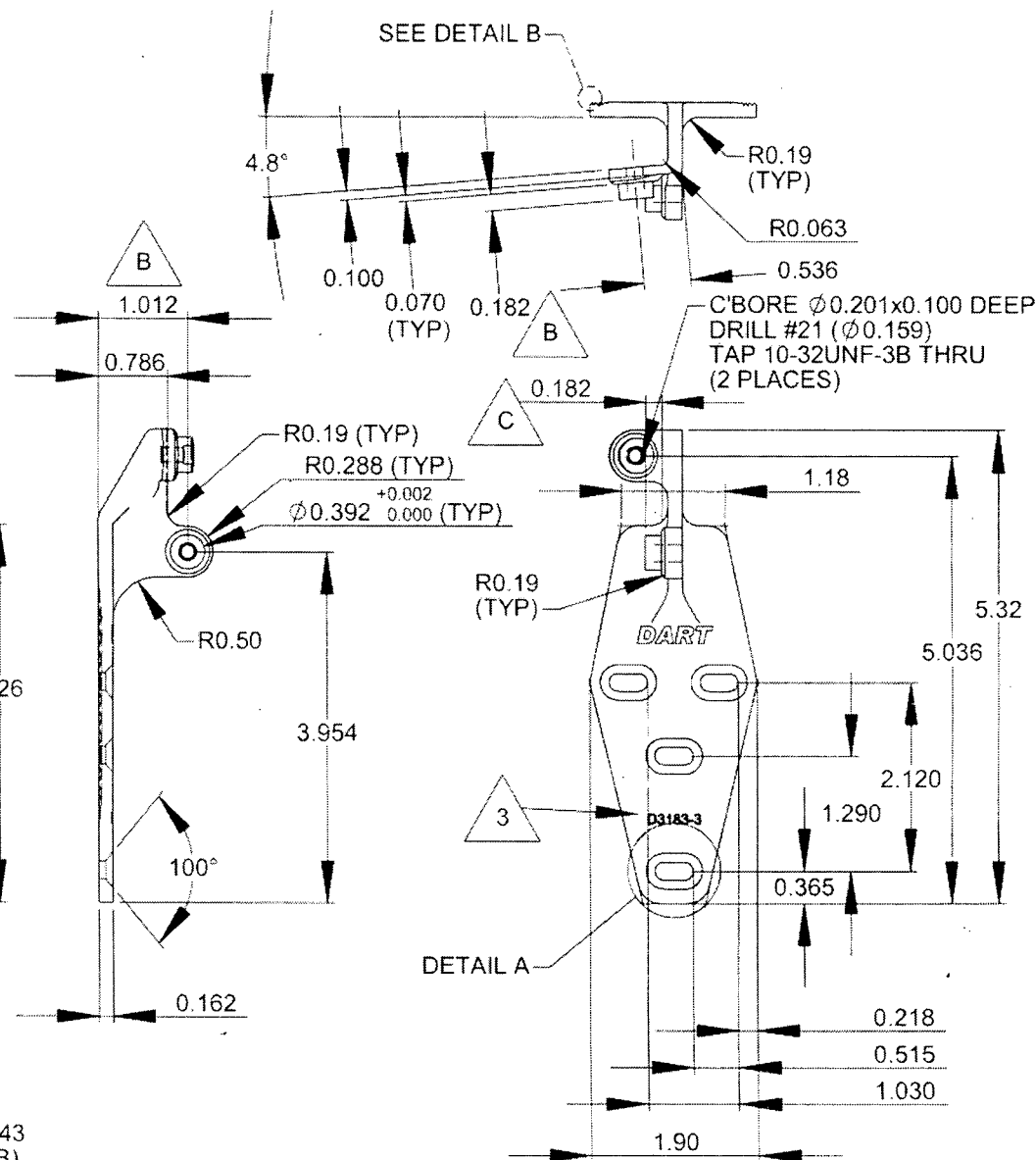
| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

DART



| DESIGN | DRAWN BY | DART AEROSPACE LTD |
|---------|----------|-----------------------------|
| CHECKED | APPROVED | HAWKESBURY, ONTARIO, CANADA |
| DATE | 04.02.17 | TITLE |
| | | BRACKET ASSEMBLY |
| | | DRAWING NO. |
| | | D3183 |
| | | REV. C |
| | | SHEET 3 OF 4 |
| | | SCALE |
| | | 1:2 |



D3183-3 BRACKET SHOWN
(REPLACES BELL P/N 412-030-304-105)
D3183-4 BRACKET OPPOSITE
(REPLACES BELL P/N 412-030-304-106)

- 1) MATERIAL: 17-4 SS PER AMS 5604/5643
(REF DART SPEC. M17-4-B)
MIN ULTIMATE STRENGTH = 150 ksi
MIN YIELD STRENGTH = 100 ksi
- 2) BREAK ALL SHARP EDGES 0.005 TO 0.015
- 3) ENGRAVE DART P/N & LOGO AS SHOWN
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) ALL DIMENSIONS ARE IN INCHES

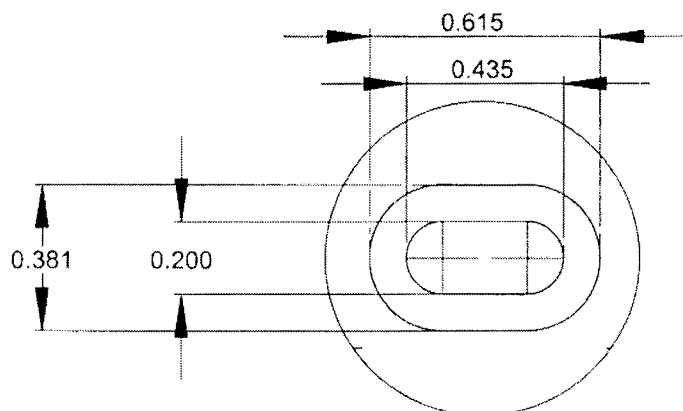
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DEO ATTACHED
RELEASED



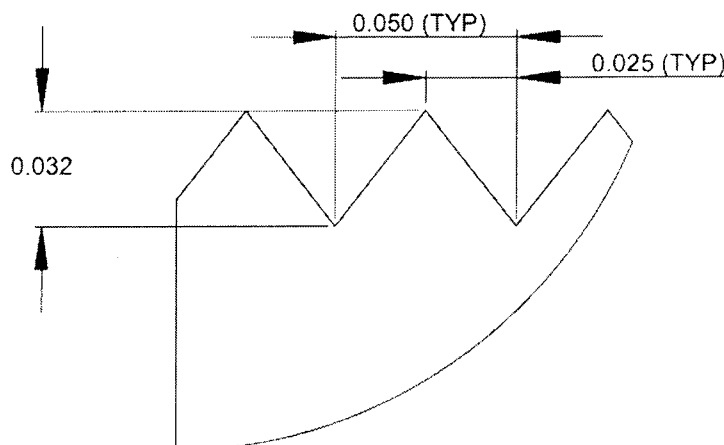
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|-------------------------|----------------------------------|--|------------------------|
| DESIGN | DRAWN BY | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | APPROVED | DRAWING NO. D3183 | REV. C SHEET 4 OF 4 |
| DATE 04.02.17 | TITLE BRACKET ASSEMBLY | | SCALE 1:1 |



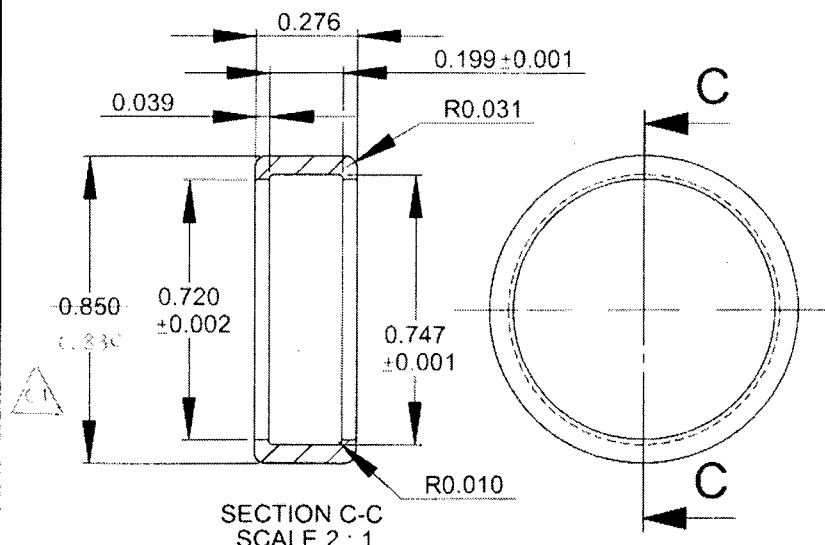
DETAIL A (2 : 1)

RELEASED
04-03-01

DEO ATTACHED



DETAIL B (20 : 1)



D3183-9 CAP

- 1) MATERIAL: DELRIN ROD, Ø1.00
(REF DART SPEC. M-DELRIN-R1.00)
- 2) TOLERANCES ARE PER DART QSI 018
UNLESS OTHERWISE NOTED
- 3) ALL DIMENSIONS ARE IN INCHES

D3183-045 BEARING ASSEMBLY

- 1) ASSEMBLE D3183-5 BEARING AND
D3183-9 CAP

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| | | | | | | | |
|----------------------|---------------------------|------------------|---|--|--------------------------|---------------------------|--------------|
| DRAWING NO. D3183 | TITLE BRACKET ASSEMBLY | REV.C1 | DART AEROSPACE LTD ENGINEERING ORDER | | D.E.O. NO. D3183-C1-1 | SHEET NO. SHEET 1 OF 1 | SCALE NTS |
| DRAWN qp | CHECKED J | MFG. APPR. A | APPROVED MP | | DE APPR. H | | |
| DATE 10.05.14 | DATE 10.06.30 | DATE 10.06.30 | DATE 10/06/30 | | DATE 10/06/30 | | |

D3183-5 BEARING

ADD POSSIBLE SUPPLIER: KML P/N 6800-ZZ

BASIC LOAD RATING REQUIREMENT: Cr = 1720 N (386 lb) MIN [DYNAMIC]
Cor = 840 N (188 lb) MIN [STATIC]

REF PAR 10-012

RELEASED
2010-07-22
MP